



IOWA
Department of
Natural Resources

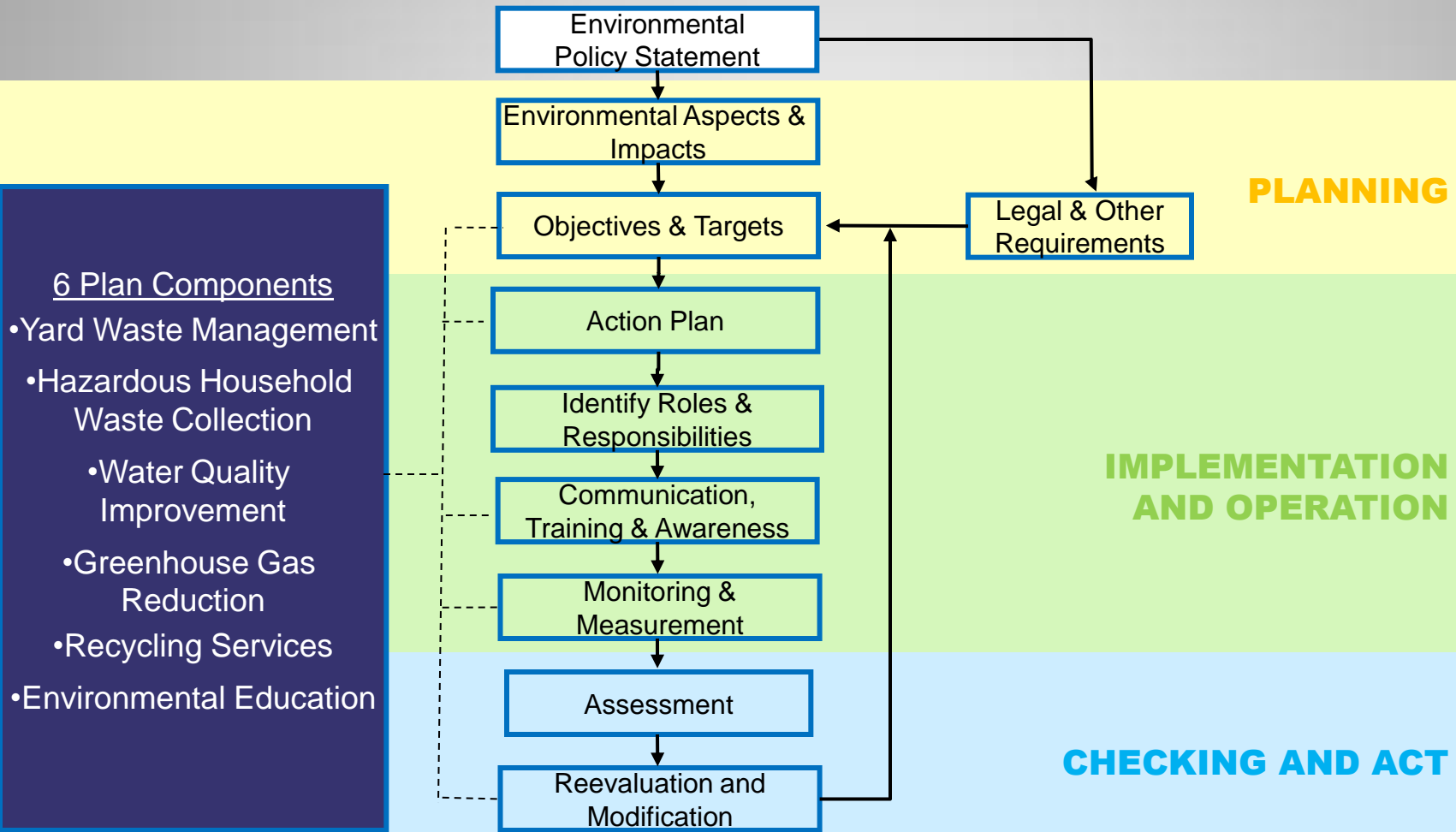
Activities, Environmental Impacts & Aspects

EMS Annual Conference
November 2011



G R E S H A M
S M I T H A N D
P A R T N E R S

Iowa EMS Framework (HF 2570)



To Reduce Environmental Impacts

Is the Main Purpose of an EMS



CAUTION: This is the Most Confusing and Difficult Part of the EMS

Recommended Site Visits in Assist in January

HF 2570 Essentials

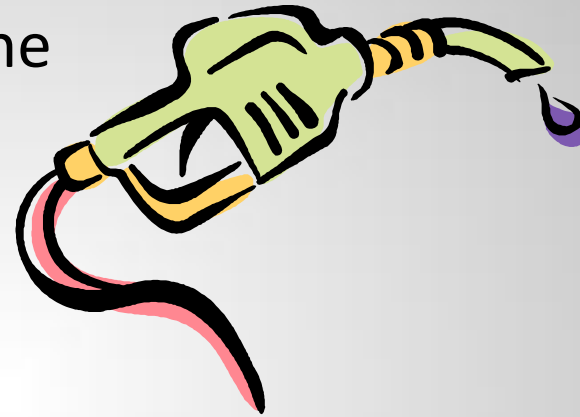
Environmental Impacts:

The organization identifies and evaluates the actual or potential aspects and impacts to the environment, whether adverse or beneficial, from its activities, services and facilities. During the evaluation process, significant impacts to the environment are determined.

Definitions

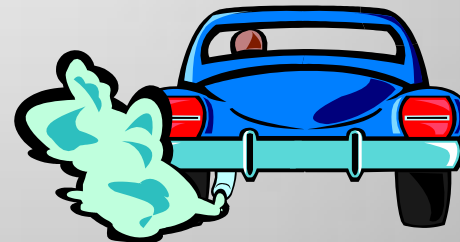
- Activity = A Task or Operation
Generally Occurring Within the
EMS Fenceline

- Fueling/Operating Vehicles
- Purchase of Chemicals
- Environmental Education



- Aspect = The Activity's Interaction with the
Environment

- Air Emissions
- Natural Resources
- Recycling



Definitions

- ⦿ Impact = A Change to the Environment, Positive or Negative
 - Degradation of Air Quality
 - Decrease in Natural Resources
 - Increase in Landfill Space
- ⦿ Significant Impacts = Those Environmental Impacts that the Organization Places the Highest Priority



EMS Terminology– “Aspects”

“Aspects are elements of an organization’s activities or products or services that can interact with the environment.”

- Generally a Difficult Concept and Confusion Between Aspects and Impacts



Keep a Simple Aspect/Impact Analysis in Your Head

⦿ Activity

- Changing Oil

⦿ Aspects (Interaction)

- Air Emissions
- Use of Oil, Absorbents
- Recycling of Oil
- Spills

⦿ Impacts (Result)

- Degrade Air Quality
- Consumption of Natural Resources
- Increase Landfill Space
- Degrade Water Quality

Methods for Identifying Aspects/Impacts

- Activities List Already Exists
- Evaluate Job Descriptions
- Evaluate Organization's Budget
- ***Input and Output Method***
- Interview Staff in Shop and Field
- EMS Core Team Meeting



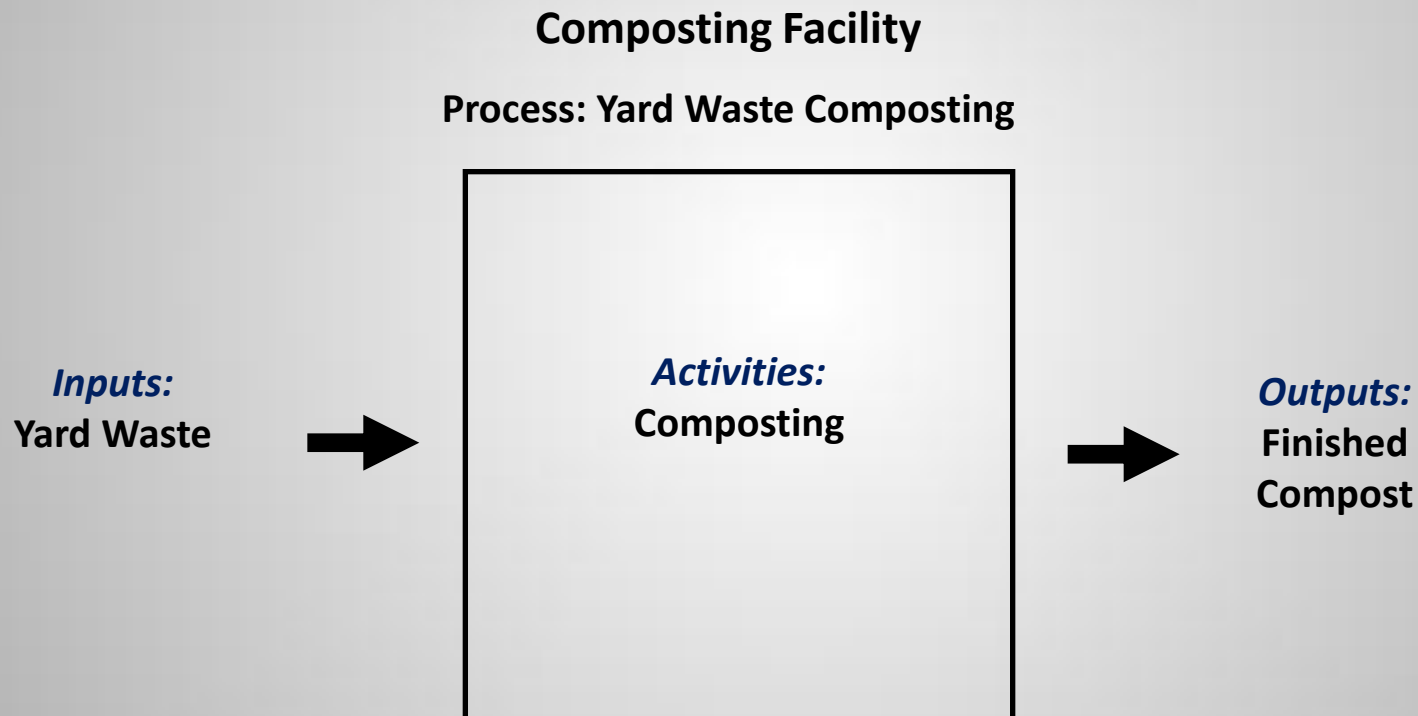
Level of Detail in Activities Identification

- Too Little Detail During Activities Identification May Cause Significant Impacts to Be Missed
- Use Common Terminology for Shared Activities Between Facilities
 - Vehicle Fueling Vs. Fueling Vs. Fuel Island Use...
- Too Much Detail Will Slow the Activities/Impacts Identification Process
- If you Get to 1,000, STOP!



Level of Detail in Activities Identification

- Input and Output Method

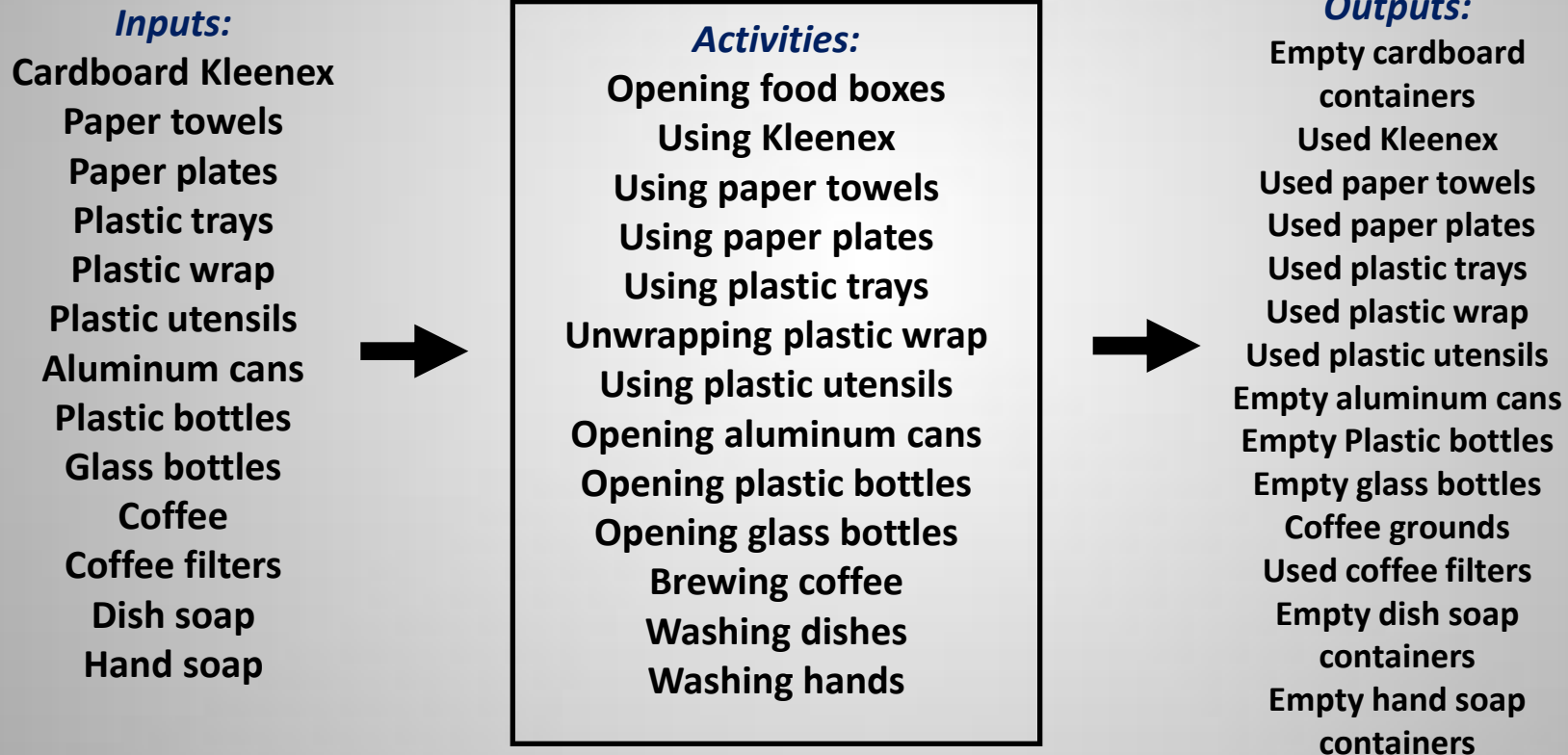


Too Broad

Level of Detail in Activities Identification

Recycling Facility

Process: Break Room Waste Generation



Too Much Detail

Level of Detail in Activities Identification

Landfill Facility

Process: Disposal of Waste

Inputs:

Garbage
Diesel Fuel
Equipment
Electricity
Stormwater
Laboratory Supplies
Maintenance Supplies
Admin. Supplies



Activities:

Heavy Equipment Operation
Equipment Maintenance
Petroleum Product Storage
Material Storage
Use of Electricity
Water Quality Monitoring
Admin. Support
Building Maintenance



Outputs:

Waste Disposal
Air Emissions
Biogas
Potential Spills
Leachate
Solid Waste
Natural Resource
Consumption

Adequate Detail

Environmental Aspects/Impacts

- ⦿ Use process to identify activities, aspects and impacts.
 - First, Identify **Activities** Within the Fenceline that Could Have an Environmental Impact
 - Then, Identify How These Activities Specifically Interact with the Environment
 - Last, Document the Resulting Change, Positive or Negative (**Impacts**)
- ⦿ ***Each Activity May Have Multiple Aspects and Impacts***
- ⦿ ***Intelix Also Allows Further Segregation of Normal, Abnormal, and Emergency Conditions***

Example

Activity	Aspect	Impact(s)
processing of composting	water quality	water degradation
building a liner	environmental	water quality
Heating/Cooling (Central Office)	Energy consumption	Use of natural resources
flaring	air emissions	air degradation
landfilling	disposal	air space
farming	tillage	erosion
farming	tillage	sediment loading
excavation	soil disturbance	erosion
Lighting use	Energy usage	Use of natural resources
Dishwashing, handwashing, toilet flushing (Central Office)	water usage	use of natural resources
stormwater management	water flow	erosion

Example

Activity	Aspect	Normal/Abnormal Operations	EMS Impact Positive / Negative
Provide HHW programs	Waste Generation and disposal	Normal	Reduction in landfill space / toxicity
Provide Education programs	Waste Generation and disposal	Normal	Reduction in landfill space
Hauling Soil and Landfill Cell Construction	Land Usage	Normal	Aesthetics and community environment
Operation of equipment	Dust Generations	Normal	Degradation of air quality
Mowing	Air Emissions	Normal	Degradation of air quality
			Aesthetics and community environment
Generation of solid waste at facility	Land Usage	Normal	
Operation of equipment	Air Emissions	Normal	Degradation of air quality
Idling vehicles at operations site	Air Emissions	Normal	Degradation of air quality
Operation of equipment	Use of Materials	Normal	Use of natural resources
Bulking of HHM materials	Air Emissions	Normal	Degradation of air quality

Example Aspects/Impacts List

Aspect	Impact
Air Emissions	Degradation Air Quality
Spills	Degradation Air, Water, and Soil Quality
Water Discharges	Degrade Water Quality
Natural Resources	Consumption of Natural Resources
Recycling	Increase Landfill Space
Waste Generation	Decrease Landfill Space
Habitat	Habitat Conservation

Best Practices for Aspects/Impacts Identification

- ⦿ Every Activity Will be Assigned *At Least One Aspects and* Resulting Impact
- ⦿ Common Terminology Will Assist in Assigning Impacts and Will Reduce Documentation Burden
- ⦿ Engage Staff to Assist in Developing List
- ⦿ Use Site Visit in January to Assist



Two Case Studies: *Identifying Environmental Activities, Impacts & Aspects*

Rathbun Area Solid Waste Commission

During a site visit, GS&P worked with staff to develop a list of activities, aspects and impacts

Waste Commission of Scott County

Through a series of internal meetings, the EMS Core Team identified activities, aspects and impacts

Activities and Impacts Exercise

Each Team Generate a List of Activities and Impacts From the Assigned Example.

Example #1

- Landfill
- Transfer Station/Baling
- Maintenance Shop
- Composting Facility

Example #2

- Recyclables Collection
- HHM Sorting
- Recyclables Sorting
- E-Waste
Demanufacturing

Example #3

- Office Work
- Ticketing Shack
- Educational Workshop
- Stormwater

Example #4

- Landfill
- Storm Water Runoff
- Compliance Sampling
- Fueling Island

Example #1



Example #2





Example #3



Example #4



Activities and Impacts Exercise

Report Out and Discussion



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Significant Impacts



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Significant Impacts

- Due to Limited Budgets and Staff, EMS allows for the Prioritization of Environmental Impacts
- Determine ***Significant Impacts*** by Ranking Each Environmental Impact Against ***Significance Criteria***



What are Significance Criteria?

- Criteria Used By an Organization to Identify Environmental Impacts Having the Potential to Significantly Impact the Environment
 - Facilitate Prioritization of Environmental Impacts to Be Addressed Through the EMS



Significance Criteria Considerations

- ⦿ Address Facets of the Environmental Impacts
- ⦿ Be Consistent With What is Important to the Organization's Priorities
 - Alignment With EMS Policy
- ⦿ Limit the Number of Criteria
 - **No Less** Than 3, **No More** Than Six
- ⦿ Avoid Criteria With Substantial Overlap
- ⦿ Finally, Screen for the **Six Plan Components**
 - They Should Be on the Significant Impact List

Example Criteria and Definitions

● **Regulated** - (legal requirement)



● **Community/Media Concerns** –
(community concerns or perception)

● **Impact to Human Health** - (the potential
or actual impact to human health)

● **Impact to Environment** - (the potential or
actual impact to flora/fauna
and/or other natural resources)



Example Criteria and Definitions

◎ **Magnitude** - (volume, size, or amount of the Impact)

◎ **Severity** - (measure of the intensity of the Impact; impact, damage, or deterioration)

◎ **Probability** - (measure of how likely it is that the Impact will occur)



Example Criteria and Definitions



◎ **Cost** - (the total money, time, and resources associated with controlling, mitigating or responding to an impact)

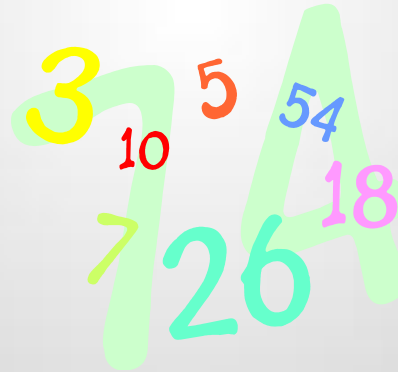
◎ **Operational impact** - (the level of influence, consequence, or effect an Impact can have on the day-to-day operations of the organization)

◎ **Is It a HF Consideration**



Scoring System

- The Simpler, the Better
 - Calculus is Not Going to Give you a Better Answer!
- Scoring System Can be Numerical or Descriptive
 - 1 to 5 or 1 to 10
 - Low, Medium, High



Scoring System (cont.)

- Document Scoring “Rules” to Provide for Consistency in the Process
- Activities/Impacts Will be Revisited on a Regular Basis, So Get Something on Paper to Start Working on and **Then Move on!!**



Scoring System Example

- Assigned criteria values:

- Low/Not Applicable=1; Moderate=3; High=5

- Equation:

$$(\text{Criterion 1}) + (\text{Criterion 2}) + (\text{Criterion 3}) + (\text{Criterion 4}) \\ \times (\text{Criterion 5}) = \text{Total Score}$$

Impact	Regulated?	Cost	Operation Impact	Likelihood	HF	Total Score
Degrade Water Quality from Spills	5	5	3	1	5	70
Recycling Office Paper	1	2	1	1	5	25

Methods for Establishing a Significance Threshold

- ⦿ Sort from High to Low
 - Look for “Natural Break Point” Where Scores Change
 - Choose a Threshold Value

- ⦿ Set a Limit at What Your Organization Can Handle

Case Study Follow-Up : Rathbun & Scott County Significance Criteria

Rathbun Example

	Regulated	Environment all Impacts	Cost/ Operations	Probability	Community	HF	Score
	5	5	5	3	3	5	105
	5	5	5	3	3	5	105
	5	5	5	3	3	5	105
	5	5	5	3	3	5	105
	5	5	5	3	3	5	105
	5	3	5	3	3	5	95
	5	1	5	3	5	5	95
	5	3	3	5	3	5	95
	5	3	1	5	5	5	95
	3	3	3	5	5	5	95

Scott County Example

Regulated ▼	Impact to Natural Resources ▼	Impact to Human Health ▼	Frequency ▼	Outreach ▼	HF2570 ▼	TOTAL ▼
1	5	3	5	5	5	24
3	3	3	5	3	5	22
5	3	3	3	3	5	22
1	5	1	5	3	5	20
1	3	3	3	3	5	18
5	1	5	1	5	1	18
5	1	3	5	3	1	18
5	5	3	1	3	1	18

Scott County Criteria Explained



Significance Criteria	General Definition	Score of 1	Score of 3	Score of 5
Regulated	Degree to which the environmental aspect is subject to federal, state and local regulations. Also includes company policies and other restrictions where applicable.	Not regulated.	Subject to permit conditions or best management practices.	Strictly regulated.
Impact to Natural Resources	Size, volume or magnitude of impact to soil, surface water, stormwater, groundwater, water or air quality.	Low to no potential for release to environment or potential impact of	Potential for release with minimal to no impact.	High potential for release with significant impact.
Impact to Human Health	Is there an impact to worker health?	Low to no potential for exposure to injury.	Potential for exposure with	High potential for exposure.
Frequency	Number of times the activity occurs.	Rarely (once every few years).	Regularly (several times a year).	High Frequency (several times per week/continuous).
Outreach	Actual or potential concern or perceptions of community, media and other stakeholders.	No to low potential for impact to the community.	Some potential for community impact.	High potential for impact to the community

List of Significant Impacts (Cedar Rapids)

Facility	Activity	Aspect	Normal / Abnormal Operations	Impact	Regulated	Frequency	Impact on Environment	Level of Service	Component of HF2570	TOTAL
Site 1	Leachate Collection	Water Quality	Abnormal	Leachate weeps/Contamination of surface water	5	5	5	5	2	40
Site 1	Leachate Collection	Water Quality	Normal	Prevention of leaks/Increase gas production	5	4	4	5	2	36
Site 1,2	Landfill Immediate Cover	Storm Water Management	Abnormal	Exposed trash/Leachate weeps	5	3	5	4	2	34
Site 1,2	Landfill Gas Collection	Air Quality	Abnormal	Air emissions/Explosion possibility	5	2	5	5	2	34
Compost	Processing Yard Waste	Air Quality	Normal	Producing compost	5	4	3	5	2	34
Site 2	Recycling of auto fluids	Water Quality	Abnormal	Contamination of ground water	4	4	4	5	2	34
Site 1	Ground Water Monitoring	Water Quality	Normal	Provides indication of ground water changes	5	3	4	4	2	32
Site 2	Leachate Collection	Water Quality	Normal	Prevention of leaks/Increase gas production	5	4	2	5	2	32

Significant Impacts and Objectives and Targets

- ◉ All Significant Impacts Must Be Addressed in the EMS
 - Primarily Through the Adoption of an Objective and Target
 - Objectives and Targets Set, or Explain Why Not
 - Don't Take On Too Many Impacts at One Time

- ◉ Conduct a Reality Check—*Does It Makes Sense?*

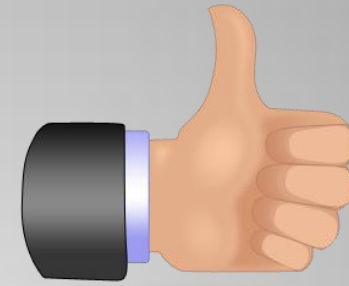


Significant Impacts Considerations

- ◎ Six Plan Components Must be Addressed
 - (Yard Waste Mgmt, HHHW Collection, Water Quality Improvement, GHG Reduction, Recycling Services, Environmental Education)
- ◎ Make Sure the Six Areas are Included in Significant Impacts List
- ◎ Other High Profile Issues
 - E-Waste, Odors, etc.
- ◎ To Increase Focus on a Designated Area of the Organization
 - Vehicle Fleet, Operational Efficiency, etc.

EMS Procedure

- ◎ Document Your Process in Determining Activities, Impacts, and Significance
 - Someone Will Have to Update This in the Future...and It May Not Be You!
- ◎ Include Responsibilities and Frequency of Updating Activities, Impacts, and Significance
 - Usually on an Annual Basis
- ◎ Consider “Management of Change”...How are You Going to Review and Incorporate Changes in Activities
- ◎ Keep in Mind Impacts and Significant Impacts May Change Through Time



Best Practices

- Engage Staff Across the Organization to Develop Activities List
- Employ the Core Team to Identify Significant Impacts
- Make Your Scoring Methods and Criteria Simple, but Meaningful
- Determine Significance Based on Scoring as well as Organizational Priorities and Limitations
- Make Sure to Address 6 Plan Components
- Document Your Methods and Final Decisions
- Review Your List on a Periodic Basis (Annually)



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Questions



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